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(71) Applicant (for all designated States except US): **APPLIED MOLECULAR EVOLUTION, INC.** [US/US];
3520 Dunhill Street, San Diego, CA 92121 (US).
(72) Inventors; and
(75) Inventors/Applicants (for US only): **WATKINS, Jeffry, D.** [US/US]; 3442 Fortuna Ranch Road, Encinitas, CA 92024 (US). **PANCOOK, James, D.** [US/US]; 12495 Caminito Brioso, San Diego, CA 92131 (US).
(74) Agents: **SPAIN, Astrid, R.** et al.; McDermott, Will & Emery, 4370 La Jolla Village Drive, Suite 700, San Diego, CA 92122 (US).

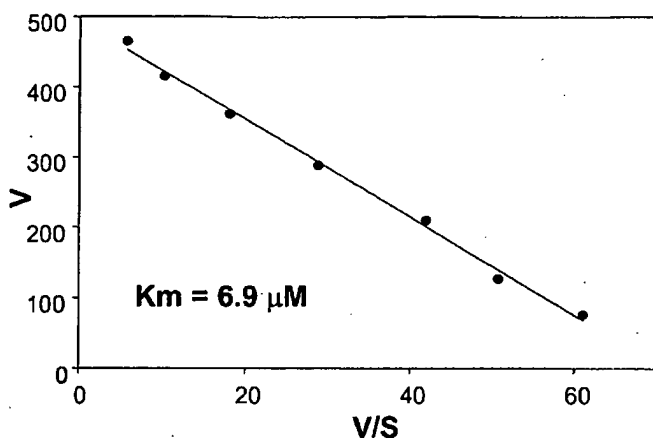
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(54) Title: BUTYRYLCHOLINESTERASE VARIANTS THAT ALTER THE ACTIVITY OF CHEMOTHERAPEUTIC AGENTS



(57) Abstract: The invention provides a butyrylcholinesterase variant having the amino acid sequence selected from SEQ ID NOS: 4, 6, 8, 10, 12, 14, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194 and 196, or functional fragment thereof. In addition, the invention provides a method of converting a camptothecin derivative to a topoisomerase inhibitor by contacting the camptothecin derivative with a butyrylcholinesterase variant selected from SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58,

60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, and 196, or functional fragment thereof, under conditions that allow conversion of a camptothecin derivative to a topoisomerase inhibitor. Further, the invention provides a method of treating cancer by administering to an individual an effective amount of a butyrylcholinesterase variant selected from SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, and 196, or functional fragment thereof, exhibiting increased capability to convert a camptothecin derivative to a topoisomerase inhibitor compared to butyrylcholinesterase.



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.